



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,828	12/03/2003	Ping T. Tang	MP1436	5519
60537 7590 03/30/2007 BRINKS HOFER GILSON & LIONE/MARVELL P.O. BOX 10395 CHICAGO, IL 60610			EXAMINER MAI, TAN V	
			ART UNIT	PAPER NUMBER
			2193	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/726,828

Applicant(s)

TANG ET AL.

Examiner

Tan V. Mai

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 1/22/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 39-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 39-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date. 1/20/04; 8/18/05; 3/9/06 & 7/21/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

1. Applicant's election without traverse of Group I, Claims 1-20 & 39-44, in Paper dated 1/22/07 is acknowledged.

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-20 and 45-50 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims recite a method (independent claim 1), apparatus (independent claims 7, 19 & 45) and machine accessible medium (independent claim 13) claims for performing a mathematical function. It is noted that apparatus claims recite processors which are NOT specific machines.

"[t]o satisfy section 101 requirements, the claim must be for a practical application of the Sec. 101 judicial exception, which can be identified in various ways:

- . The claimed invention "transforms" an article or physical object to a different state or thing.
- . The claimed invention otherwise produces a useful, concrete and tangible result,..."

See "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" OG Date: 22 November 2005.

Since there is no physical transform to establish a practical application, a useful, concrete and tangible result appears to be lacking. Therefore, claims 1-20 and 45-50 are directed to a non-statutory process.

3. Claims 1-20 and 39-56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per independent claim 1, the claim language is vague and indefinite. For instance, although the preamble of independent claim 1 claims a "method of performing a calculation of a function", the claim fails to recite the necessary detail steps to perform the recited function nor are there any recitation describing how such a method (or steps) is actually provided in the method. Sufficient detail method (or steps) must be recited to adequately describe and constitute the proposed method. Similarly noted independent claims 13

As per independent claim 7, the claim language is vague and indefinite. For instance, although the preamble of independent claim 7 claims a "apparatus for performing a calculation of a function", the claim fails to recite the necessary detail physical structures to perform the recited function nor are there any recitation describing how such an apparatus (or elements) is actually provided in the apparatus. Sufficient detail apparatus or elements must be recited to adequately describe and constitute the proposed apparatus. Similarly noted independent claims 19, 45 and 51.

As per independent claim 39, the claim language is vague and indefinite. For instance, although the preamble of independent claim 39 claims a "apparatus for determining an evaluation value of a polynomial", the claim fails to recite the necessary detail physical structures to perform the recited function nor are there any recitation describing how such an apparatus (or elements) is actually provided in the apparatus.

Sufficient detail apparatus or elements must be recited to adequately describe and constitute the proposed apparatus.

Therefore, claims 1-20 and 39-56 seem to be **incomplete** in that they recite only a portion of the methodology required for the method / apparatus to become operational, i.e., they omit essential elements and/or steps. See MPEP 2172.01.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-20 and 39-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quek et al (Applicants' admission Prior Art 5,280,439).

As per independent claim 1, Quek et al disclose, e.g., see Fig. 2, the invention substantially as claimed, including: providing a set of coefficient values A_i , B_i and C_i associate with inverses and square roots functions (e.g., see abstract or col. 3, lines 49-59), generating a reduced width coefficient value (e.g., see col. 4, lines 4-35, "[t]he values of the coefficients... Because this initial approximation needs to be accurate to 28 bits at most, the coefficients do not all need to be stored to full precision. In the preferred embodiment there are 15 bits of accuracy for A, 24 for B, and 32 for C. This provides 31 bits overall accuracy for $Ax.sup.2 + Bx + C$, because there are at least 31 bits of accuracy in each of the three elements being

Art Unit: 2193

added. The coefficients A, B and C corresponding to this value x are then provided to registers 31, 33 and 34, respectively.", and storing the coefficient values A_i , B_i and C_i in the memory. It is noted that Quek et al do not show the "identifying a set of coefficient values" step; however, Quek et al use all the coefficients. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to design the claimed invention according to Quek et al's teachings because the method of performing a calculation of a function having reduced width coefficient as claimed.

As per dependent claims 2-6, these detail features are obvious to a person having ordinary skill in the art.

Due to the similarity of claim 13-20 and 45-50 to claims 1-6, they are rejected under a similar rationale.

As per independent claim 39, the claim recites "reduced-width data generator", "function selector" and "comparator". Quek et al does show "reduced-width data generator" (see explain in claim 1), "function selector" (e.g., col. 3, lines 49-59 "inverse, division, inverse square root, and square root". Therefore, Quek et al should have selector means for selecting the desired function). It is noted that Quek et al do not show the claimed "comparator"; however, the "comparator" is merely comparing "at least one function". The "comparator" is insignificant patent weight for the claimed "determining an evaluation value of a polynomial".

As per dependent claims 40-44, these detail features are obvious to a person having ordinary skill in the art.

Due to the similarity of claim 51-56 to claims 39-44, they are rejected under a similar rationale.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cited references are art of interest.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tan V. Mai whose telephone number is (571) 272-3726. The examiner can normally be reached on Mon-Wed and Fri. from 9:30am to 2:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An, can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is:

Official (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2100.



Tan V. Mai
Primary Examiner